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Application No.: 09/678,183
Amendment Dated March 8, 2004
Reply to Office Action dated: December 8, 2003

Attorney Docket No.: M-193

REMARKS

Claims 1-26 are pending in this application. Claims 1-11, 13, and 16-26 are rejected; and claims 12, 14, and 15 are objected to in this application.

Claims 1-6, 12, 13, 20, 22, 25, and 26 are amended hereby; and claims 16-19 are canceled hereby. Applicants submit that no new matter has been introduced into any of the amended claims.

Applicants acknowledge that prosecution has been reopened in view of the Appeal Brief filed September 1, 2003. Accordingly, Applicants have chosen to file a reply under 37 CFR § 1.111.

Responsive to the objection to each of claims 5, 12, 13, and 16 based upon informalities, Applicants have amended claims 5, 12, and 13 and have canceled claim 16, keeping in mind the comments offered by the Examiner. Accordingly, Applicants submit that claims 5, 12, and 13 are now in allowable form and hereby respectfully request that the objection thereto based upon informalities be withdrawn.

Responsive to the objection to claims 1-4, 6, 20-24, and 26 under 35 U.S.C § 112, first paragraph, Applicants have amended claims 1-4, 6, 20, 22, and 26, keeping in mind the comments offered by the Examiner. Specifically, the limitation regarding the use of a particular equation to generate a theoretical slide displacement curve has been removed from the claims. Instead, the claims in question now more generically recite the generation of a theoretical slide displacement curve based upon the press speed and a plurality of press variables corresponding to characteristics of the press. The generation

Application No.: 09/678,183
Amendment Dated March 8, 2004
Reply to Office Action dated: December 8, 2003

Attorney Docket No.: M-193

of a theoretical slide displacement curve is supported, for example, by Figs. 3A-5B and by pages 16-17 of the specification as originally filed.

Applicants further hereby incorporate by reference the contents of the response filed February 18, 2003. Applicants respectfully indicate that the Minster Machine Company references cited therein (Schockman '935, Bornhorst et al '806, and Oen '612) each indicate a variety of slide motion curves for a variety of mechanical press operation conditions. Bornhorst et al and Oen each recognize that a change in press variables would ultimately result in a change in the curve produced. As such, there is ample support in both the current specification and in the prior art to indicate a correlation between a theoretical slide displacement curve and the press speed and press variables associated with the press. At the very least, the effect of press speed and/or a change in a press variable should be able to empirically determined and thereby used to help generate a given theoretical slide displacement curve. Thus, Applicants submit that claims 1-4, 6, 20-24, and 26 are in allowable form and hereby respectfully request that the rejection thereof under 35 U.S.C. § 112, first paragraph, be withdrawn.

Responsive to the rejection of claims 5 and 7-11 under 35 U.S.C. § 103 (a) as being unpatentable over U.S. Patent No. 3,869,927 (Lose et al) in view of U.S. Patent No. 5,997,778 (Bulgrin), Applicants have amended claim 5 and submit that claims 5 and 7-11 are now in condition for allowance.

Claim 5, as amended, recites in part:

establishing a start point on the slide down stroke between top dead center and the contact point;

establishing an end point on the slide up stroke between top dead center and the contact point;...

superimposing the identified start points on the theoretical and actual slide displacement curves; and

superimposing the identified end points on the theoretical and actual slide displacement curves so that the theoretical and actual slide displacement curves can be compared to obtain indicators of press performance.

Applicants submit that such an invention is neither taught, disclosed, nor suggested by Lose et al '927, Bulgrin '778, or any of the other cited references, alone or in combination.

Lose et al illustrates in Fig. 3 a graph comparing the relationship between slide displacement and slide crank rotation of slider-crank mechanisms of the prior art and that expected for the mechanism illustrated in Fig. 1, having a gear ratio of 3:1. Specifically, the solid line graph in Fig. 3 represents the slide movement associated with the prior art slide-crank mechanism, while the broken line graph represents the expected slide displacement pattern for the geared drag link arrangement illustrated in Fig. 1. Fig. 4 is a graph of an actual plot of the position of the slide of a press having a gear drag link-slider crank mechanism of Fig. 1. As discussed in column 8, lines 1-24, the graph of Fig. 4 is a plot from the readout of a computerized analysis of the motion associated with the mechanism in Fig. 1. Further, the slide displacement in actual practice, as seen from Fig. 4, corresponds substantially to the expected displacement pattern illustrated in Fig. 3.

While Lose et al does give a general indication that the actual practice corresponds to the expected displacement pattern, there is no specific superimposition of the expected slide displacement pattern of Fig. 3 upon that of the actual plot position of Fig. 4. Accordingly, Lose et al does not indicate or imply establishing and/or labeling specific start and end points on each of the two graphs from Figs. 3 and 4 and, thus, clearly does not disclose or suggest superimposing start and end points from each of the two curves upon one another so that the two curves can be compared with one another. Thus, Applicants submit that Lose et al '927 fails to teach or suggest the present invention as set forth in claim 5, as amended.

Bulgrin '778 illustrates in Fig. 3 the depiction of a velocity profile graph 40 based upon operator set points A, B, C, D, E, and F. Also shown in Fig. 3 is a trace of the actual velocity of the ram superimposed over the velocity profile set in that same figure. Graphs 42, 43, show theoretically what the velocity profiles of the ram would be if the machine actually were to meet the set points established by the control systems. Graphs 42, 43, as admitted by Bulgrin at column 10, lines 35-53, simply show that current control systems cannot meet the set velocity profile curve 40. Therefore, Bulgrin '778 actually teaches away from a disclosure of the superimposition of any of the identified points (A-F) with any particular corresponding points on an actual slide displacement curve. Thus, Bulgrin '778 clearly does not disclose or suggest the present invention as set forth in claim 5, as amended.

Application No.: 09/678,183
Amendment Dated March 8, 2004
Reply to Office Action dated: December 8, 2003

Attorney Docket No.: M-193

For all the foregoing reasons, Applicants submit that claim 5, and those claims depending therefrom, are now in condition for allowance and hereby respectfully request that the rejection thereof based upon Lose et al in view of Bulgrin be withdrawn.

Claim 13 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Lose et al in view of Bulgrin and further in view of U.S. Patent No. 5,870,254 (Baserman et al). However, claim 13 depends from claim 5, which is in condition for allowance for the reasons set forth above. Additionally, Applicants submit that claim 13 is allowable based upon its own merits, for essentially those reasons set forth at page 14 of the response submitted February 18, 2003, the contents of which is hereby respectfully requested. The argument set forth therein is essentially that the Baserman reference is not analogous art and is not used to solve the same problem as the present invention. For all the foregoing reasons, Applicants submit that claim 13 is now in condition for allowance and hereby respectfully request that the rejection thereof based upon Lose et al in view of Bulgrin and Baserman et al be withdrawn.

Responsive to the rejection of claims 16-19 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,484,106 (Schoch) in view of U.S. Patent No. Re 33,783 (Spehrley, Jr. et al), Applicants have chosen to cancel claims 16-19, thereby rendering such rejection to be moot.

Responsive to the rejection of claim 25 under 35 U.S.C. § 103(a) as being unpatentable over Schoch '106 in view of Spehrley, Jr. et al '783 and further in view of U.S.

Application No.: 09/678,183
Amendment Dated March 8, 2004
Reply to Office Action dated: December 8, 2003

Attorney Docket No.: M-193

Patent No. Re. 34,559 (Mickowski) and U.S. Patent No. 5,113,756 (Fuji), Applicants have amended claim 25 and submit that claim 25 is now in condition for allowance.

Claim 25, as amended, recites in part:

said computational device generating a theoretical no load value of slide displacement based upon the speed of the press and the plurality of press variables...

Applicants submit that such an invention as set forth in claim 25 is neither taught, disclosed, nor suggested by any of the cited references, alone or in combination.

The Examiner admits that the combination of Schoch '106 in view of Spehrley et al '783 fails to teach or suggest a speed sensor for sensing the speed of the press, a non-contact displacement sensor for sensing slide displacement, and an input means for inputting a plurality of variables corresponding to characteristics of the press. As such, Schoch in view of Spehrley, Jr. et al clearly then do not disclose or suggest the generation of theoretical no load value of slide displacement based upon the press speed and a plurality of press-related variables. As such, Schoch in view of Spehrley, Jr. et al fails to teach or suggest the present invention as set forth in claim 25.

Mickowski '559 discloses a data analysis and display system for a die casting machine. A typical profile 14 is representative of the velocity of the injection ram for a production cycle as a function of stroke position. A further illustrative display shows two velocity choices superimposed for comparison (Fig. 1A). Mickowski indicates (column 4, lines 62-68) that one of the superimposed traces may represent a "master profile" defined as an idealized or acceptable profile and that this "master profile" may simply represent

Application No.: 09/678,183
Amendment Dated March 8, 2004
Reply to Office Action dated: December 8, 2003

Attorney Docket No.: M-193

a previously recorded profile. This master profile is in turn used for comparison purposes with a "current profile." Mickowski '559 does not expressly disclose or suggest that the master profile is to be generated based upon the press speed and a plurality of press-related variables. Therefore, Mickowski '559 fails to teach or suggest the present invention, as set forth in claim 25, and is unable to overcome the shortcomings associated with Schoch in view of Spehrley, Jr. et al.

Fujii is cited by the Examiner as a teaching of a non-contact sensor for detecting the position of a detectable body attached to the slider of a press machine. Fujii does not disclose or suggest the use of the press speed and an input of a plurality of press variables corresponding to characteristics of the press in order to generate a theoretical slide displacement curve. Thus, Fujii fails to teach or suggest the present invention as set forth in claim 25 and is unable to overcome the shortcomings associated with the other three references associated with the rejection.

For all the foregoing reasons, Applicants submit that claim 25 is now in condition for allowance and hereby respectfully request that the rejection thereof under 35 U.S.C. § 103(a) be withdrawn.

The Examiner has indicated that claims 12, 14, and 15 would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims and, if necessary, rewritten so as to overcome objections based upon informalities, for which courtesy the Examiner is thanked. At this juncture in prosecution, Applicants have chosen not to rewrite any of claims 12, 14, and 15, instead submitting

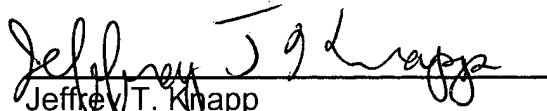
Application No.: 09/678,183
Amendment Dated March 8, 2004
Reply to Office Action dated: December 8, 2003

Attorney Docket No.: M-193

that each is now allowable based upon its dependency upon now allowable claim 5. As such, Applicants hereby respectfully request the allowance of each of claims 12, 14, and 15.

If the Examiner has any questions or comments that would speed prosecution of this case, the Examiner is invited to call the undersigned at 260/485-6001.

Respectfully submitted,


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JTK/mdc

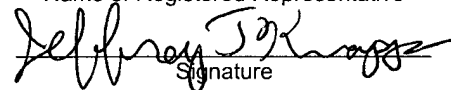
Encs: Amendments to the Claims
(14 Sheets; pp. 10-23)
Explanatory Cover Sheet Page 1

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450, on: March 8, 2004.

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Date